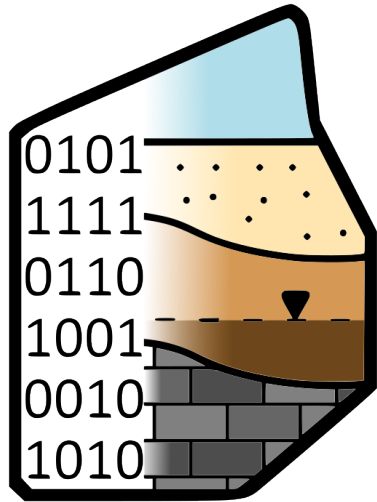


Southeastern
Transportation
Geotechnical
Engineering
Conference

November 2, 2023



Geosetta



What is Geosetta?

- A non-profit Maryland based company. The name gets its inspiration from the concept of a Rosetta stone that unlocks access to the tremendous amount of available historic geotechnical data.
- Provides a platform for hosting subsurface /geotechnical data from various publicly funded sources throughout the United States.
- Provides a preliminary understanding of anticipated subsurface conditions at any geographic area, thus assisting in the design of a cost effective and efficient subsurface exploration program.
- Geosetta has developed geospatial and visualization tools, with machine learning techniques applied.
- Geosetta is NOT a substitute for site-specific subsurface investigation.

What Is Our Mission?

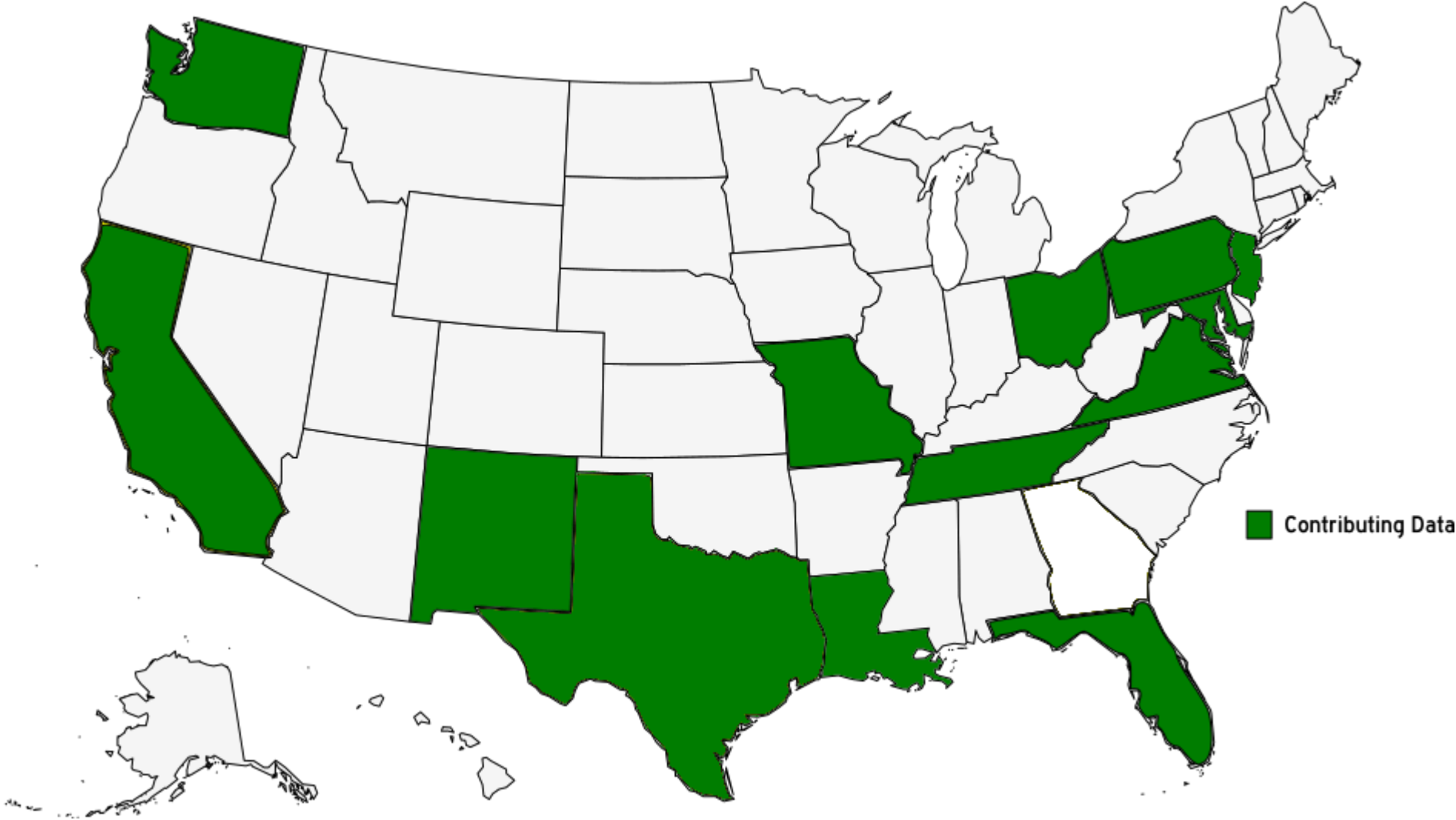
Build a Repository of Subsurface Investigation Data from Publicly Funded Sources and Derive Valuable Geotechnical Engineering Tools for The Mutual Benefit of The Data Owners and The Geotechnical and Civil Engineering Profession.



Geosetta is partnering with and contributing to the development of DIGGS.



Who is Contributing to Geosetta?



How Was Geosetta Developed?

- The foundation of Geosetta is built upon a multi-year effort at Maryland DOT to create a GIS subsurface data platform with a machine learning backend.
- This project resulted in an estimated MDOT SHA cost savings of nearly \$1M per year.
- The project won multiple awards and was recognized as an AASHTO Research Advisory Committee “Sweet Sixteen” High-Value Research Project in 2018.

[Link to Machine Learning Report](https://roads.maryland.gov/OPR_Research/MD-21-SHAUM5-23_Machine-Learning_Report.pdf)

https://roads.maryland.gov/OPR_Research/MD-21-SHAUM5-23_Machine-Learning_Report.pdf

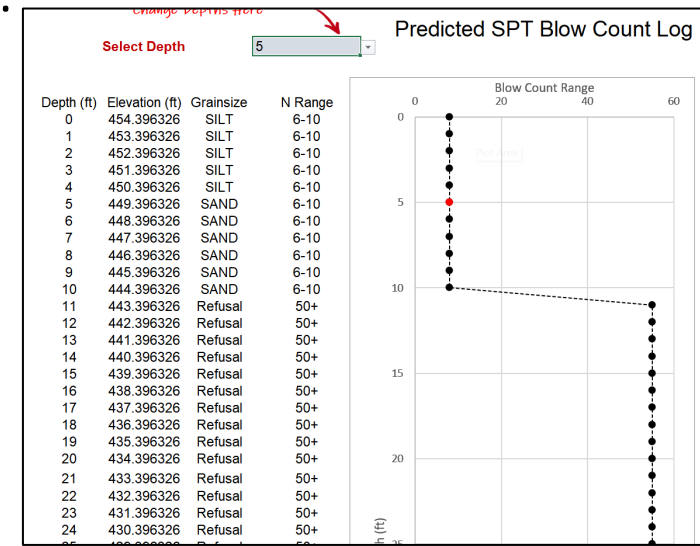
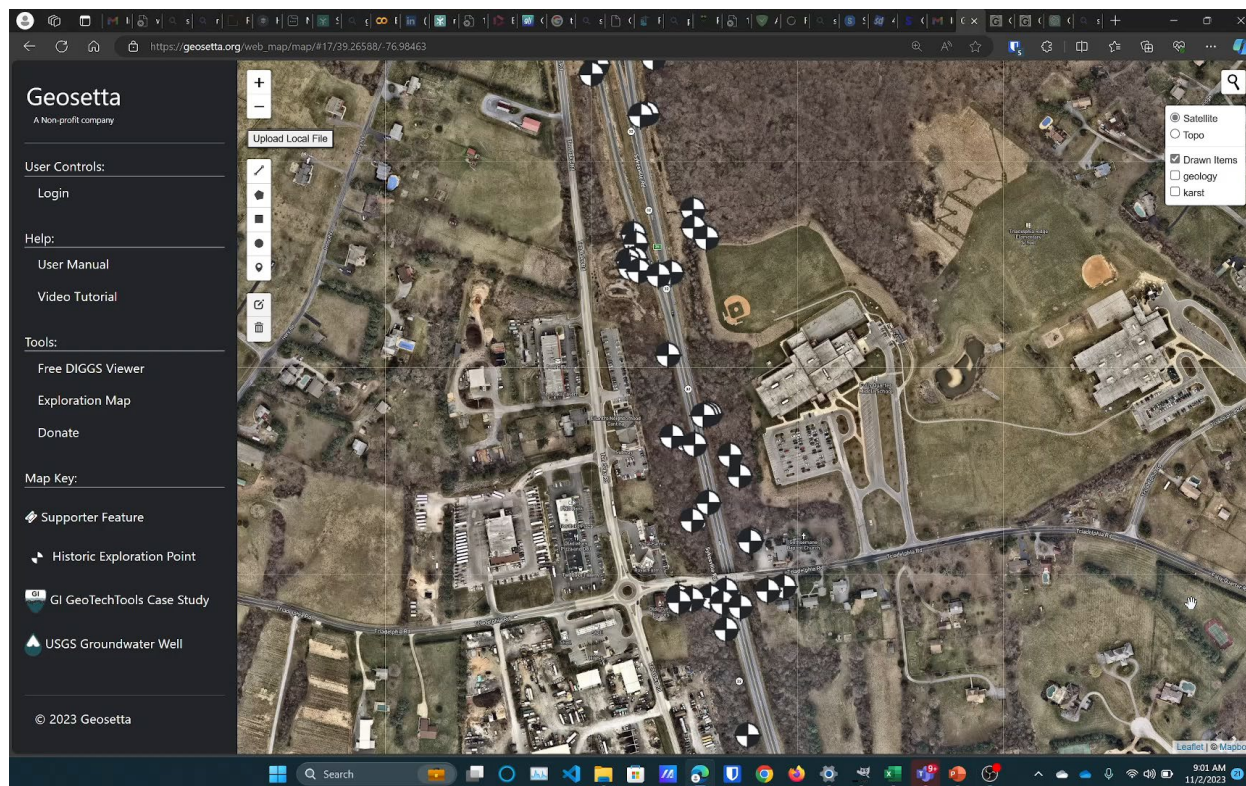
[Link to Subsurface Data platform Report](https://www.roads.maryland.gov/OPR_Research/2018_GIS-BasedBoringRequests_Published.pdf)

https://www.roads.maryland.gov/OPR_Research/2018_GIS-BasedBoringRequests_Published.pdf

System Component	Average Time taken -before-	Average Time taken -after-	Cost Savings per project (\$70/hr)	Average # of projects	Cost Savings per year
Electronic Data Requests	8 hours to prepare; 8 hours to enter lab data	4 hours to prepare; 0 hours to enter lab data	\$840	200	\$168,000
Remote field data capture	16 hours to convert paper data to digital	0 hours to convert paper data to digital	\$1,120	200	\$224,000
Automated Project Tracking	24 hours a week updating and tracking projects	0 hours	\$1,680 per week (by 52 weeks)		\$87,360
Historic Boring Data	Conservatively estimate: eliminate 2 borings on each project with easily-retrievable historic data. Assume a cost of \$1,200 per boring, the component saves \$2,400 per project.			200	\$480,000
TOTAL					\$959,360

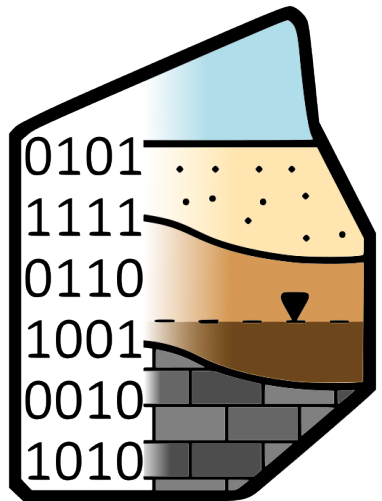
What does Geosetta Provide?

- Public Geotechnical Data in the DIGGS format (Boring Data, Insitu Data, Lab Data, etc.)
- USGS Reports, Soils Database Search, DIGGS boring Log Viewer, etc.
- Machine Learning Based Predictions for new locations
- API access to our data and deliverables



Geosetta API's

- API stands for "Application Programming Interface."
- An API allows different software applications to communicate with each other.
- This means the Geosetta History and Machine Learning Predictions are available to all, inside and outside of Geosetta. This is directly inline with our mission.
- Our goal is to make historical public geotechnical data usable and available to everyone in our profession!



Geosetta



Universities





Filter Data Export Data 19 visible features

Action	Name	Type	Latitude	Longitude	Inundation_area	Deliverables	Side	Crest_EL	Toe_EL	Crest_EL_Rev	Toe_EL_Rev	Connection	Conn_Station	Max_pos_bot_width	Min_pos_bot_EL	Left_side_slope	Right_side_slop
	N294_88	Point	43.255717	-78.2236519	Link	Link	N	514.4	504.3266	0.1589369999999235	-5.188079000000016	North Breach 4	163.898377	180	504.3266	1	1
	N294_94	Point	43.2561199	-78.2247412	Link	Link	N	514.6	509.5146	0.21861599999999726	-0.29918200000003026	North Breach 4	489.715819	180	509.5146	1	1
	N294_00	Point	43.2563451	-78.2258803	Link	Link	N	514.5	506.9483	-0.10427100000003975	-3.4541659999999865	North Breach 4	804.988743	180	506.9483	1	1
	N295_05	Point	43.2564113	-78.2270989	Link	Link	N	514.7	504.9961	-1.3603369999999586	504.9961	North Breach 4	1131.954822	180	504.9961	1	1

Project Delivery Platform



Build Better. Together.



Single Source of Truth for all our Projects.

Project Delivery tool for every project that is as easy to use as dropbox, onedrive, etc.

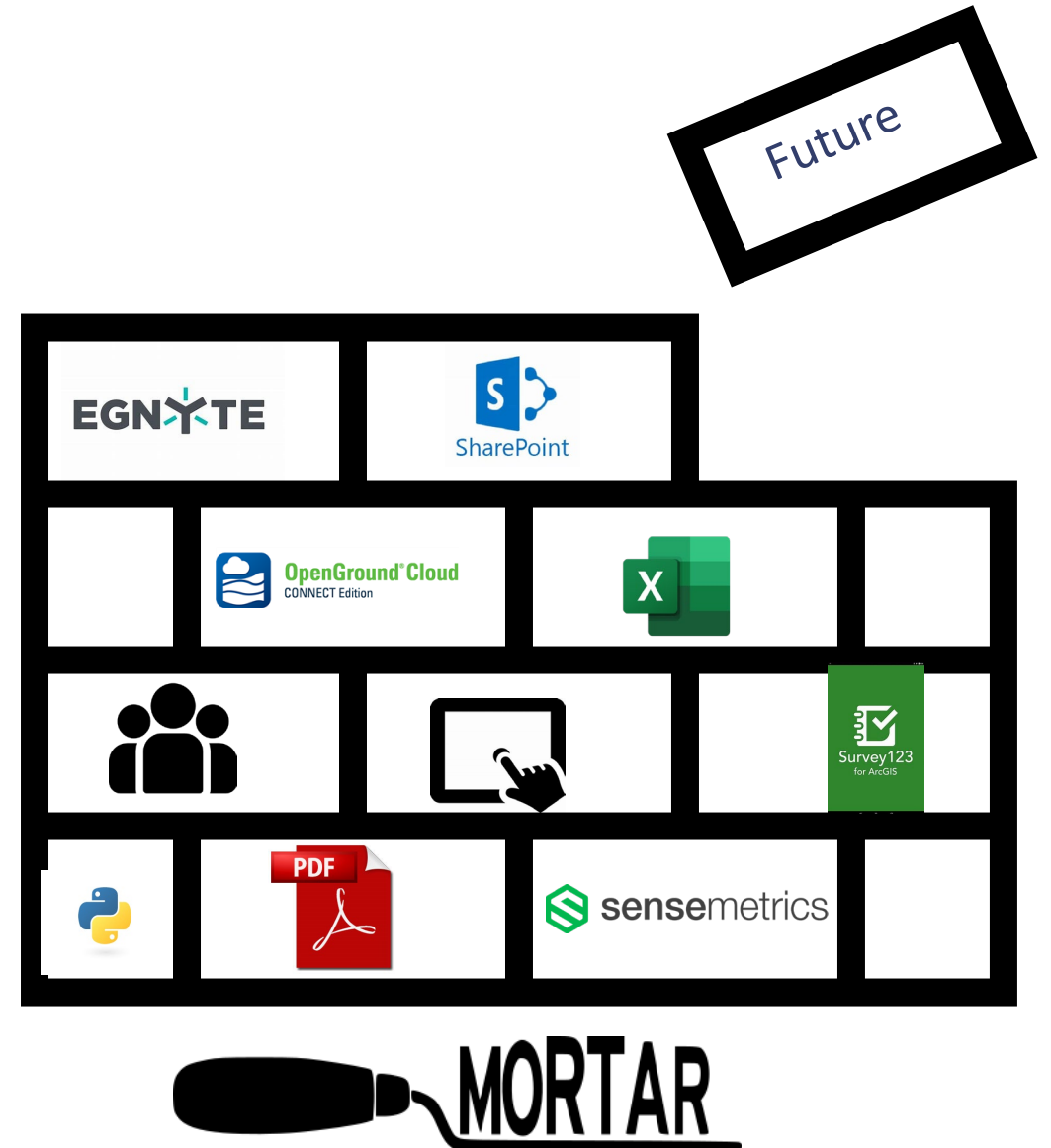
Seamlessly incorporate all project data, geotechnical, CAD, BIM, DIGGS, Remote Sensing, etc.



It all starts with a project portal

The Concept of Mortar is to be the “mortar” between the common building blocks that we are already using:

Excel, Openground, Autodesk, GIS, Egnyte, and more

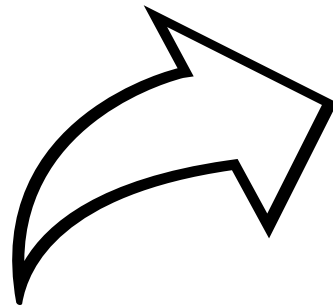




Mortar connects your tools and automatically creates interactive real time data visualization without extra effort.



It all starts with a project portal



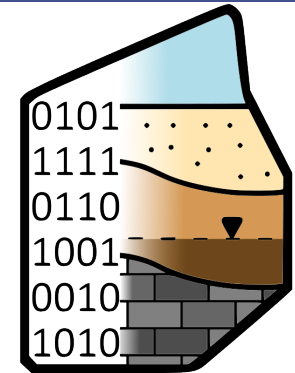
Bonita Peak

Action	Marker-color	Latitude	Longitude	Stage	Progress (%)	Footage (ft)	Est. Depth to Intercept (ft)	Workings Intercept Elev. (ft)	Date Started	Date Completed	Share_link	Last Updated	Locat
#59A600		37.904044	-107.614939	Reaming	65	462	696	11580.9	06/19/2023		Link	07/21/2023	LEF-1
#29D600		37.903139	-107.616044	Coring	84	728	869.7	11394.7	09/16/2023		Link		LEF-1
#00FF00		37.902269	-107.614556	Coring	104	898.3	860.1	11392	07/21/2023		Link	09/15/2023	LEF-2

Mortar project portal is automatically generated from your project folder content. Because the portal is always generated in real-time from the folders content, all layers automatically stay up to date. The user only needs to make sure they have the data in the folder.



It all starts with a project portal



Geosetta



Every project automatically sees nearby historic data and can generate Geosetta deliverables via the Geosetta API.

Bonita Peak

Action	Marker-color	Latitude	Longitude	Stage	Progress (%)	Footage (ft)	Est. Depth to Intercept (ft)	Workings Intercept Elev. (ft)	Date Started	Date Completed	Share_link	Last Updated	Locati
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	#29D600	37.503139	-107.616044	Coring	84	728	869.7	11394.7	09/16/2023		Link		LEG-1
	#00FF00	37.502269	-107.614556	Coring	104	898.3	860.1	11392	07/21/2023		Link	09/15/2023	LEG-2

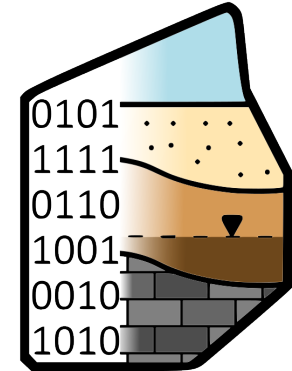


It all starts with a project portal



OpenGround® Cloud
CONNECT Edition

All boring data is captured in the field and is instantly viewable in the portal. Users can generate draft logs on demand.



Geosetta

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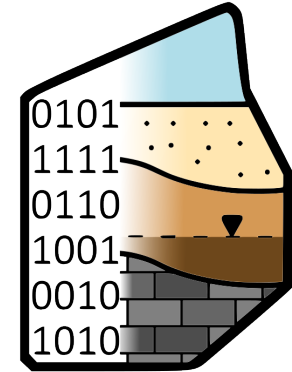


It all starts with a project portal



Bonita Peak

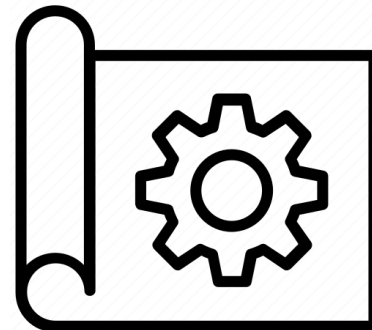
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Geosetta

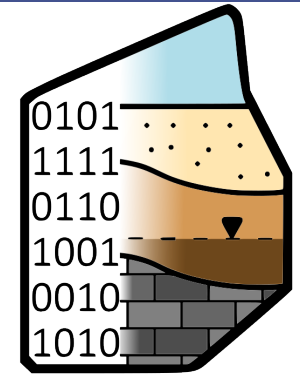


BIM models & CAD files are converted in real-time to GIS layers and observable in the portal.





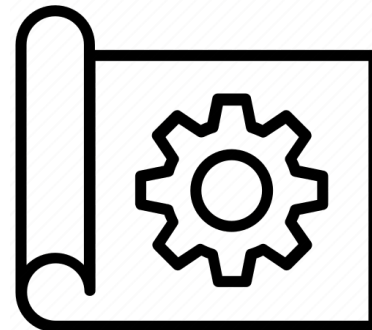
It all starts with a project portal



Geosetta

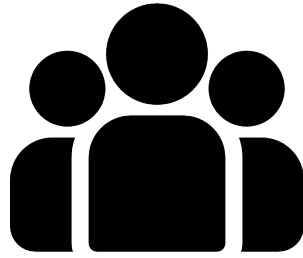
Custom Mobile apps
can be easily added
to track any other
field asset

Action	Marker-color	Latitude	Longitude	Stage	Progress (%)	Footage (ft)	Est. Depth to Intercept (ft)	Workings Intercept Elev. (ft)	Date Started	Date Completed	Share_link	Last Updated	Locat
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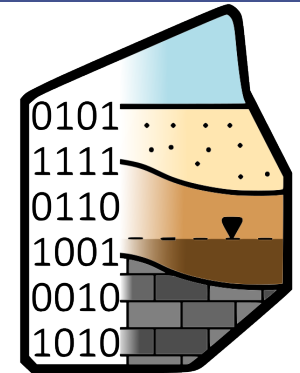


It all starts with a project portal



User Access Control

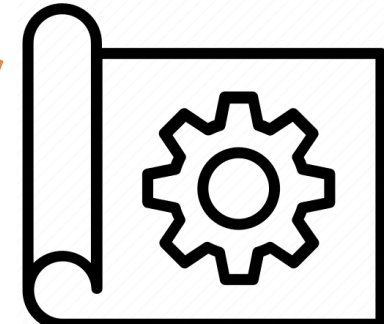
You have full control of who can access and edit this data.



Geosetta

Bonita Peak

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	#00FF00	37.502269	-107.614556	Coring	104	898.3	860.1	11392	07/21/2023		Link	09/15/2023	LEG-2





This is where our profession is headed:

- Incorporating Historic Data
- Seamless Collaboration
- Open Data and Interchangeable formats
- Transparency and vastly improved efficiency



Takeaways

Some takeaways:

- This will feel uncomfortable.
- Change is hard, resources must be provided to support this change.
- The benefits far outweigh the costs, every project that uses Mortar has benefited.



Questions?

Feel free to reach out!

ross.cutts@geosetta.org
rcutts@schnabel-eng.com